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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,984	11/14/2003	Soo-Joung Lee	P56908	7494

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EXAMINER
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RAABE, CHRISTOPHER M

ART UNIT	PAPER NUMBER
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2879

DATE MAILED: 11/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/706,984		LEE ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Christopher M. Raabe		2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.  
     4a) Of the above claim(s) 16-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. ____   |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____  | 6) <input type="checkbox"/> Other: ____                                     |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1,4,10,12,14 are rejected under 35 U.S.C. 102(b) as being anticipated by Itoh et al. (USPN 6103142).

With regard to claim 1,

Itoh et al. disclose a flat panel display device, comprising: a first substrate (column 4, lines 25-30); an electron emission assembly being formed on said first substrate (column 4, lines 25-30); a second substrate being provided at a predetermined distance from said first substrate (column 4, lines 20-30), said first and second substrates forming a vacuum assembly (column 4, lines 30-35); and an illumination assembly being formed on said second substrate (column 4, lines 15-25), said illumination assembly being illuminated by electrons emitted from said electron emission assembly (column 4, lines 20-30); said illumination assembly comprising: at least one anode electrode being formed on a first surface of said second substrate to face said first substrate, the first surface of said second substrate facing said first substrate (column 4, lines 15-30); a plurality of phosphor layers being formed in a predetermined pattern on said at least one anode electrode (column 4, lines 20-25); and a plurality of conductive layers being

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formed on said phosphor layers, said plurality of conductive layers being formed of a carbon-based material (column 4, lines 20-25).

With regard to claim 4,

Itoh et al. disclose the flat panel display device.

The phrase "with said plurality of conductive layers being formed by electrophoresis" does not structurally distinguish the invention from the prior art, as is required of apparatus claims.

With regard to claim 10,

Itoh et al. disclose the flat panel display device, with said at least one anode electrode including indium tin oxide (column 4, lines 20-25).

With regard to claim 12,

Itoh et al. disclose the flat panel display device, said electron emission assembly comprising: a plurality of cathode electrodes being formed on a first surface of said first substrate to face said second substrate, the first surface of said first substrate facing said second substrate; at least one gate electrode being formed on the first surface of said first substrate to face said second substrate; an insulation layer separating said plurality of cathode electrodes from said at the least one gate electrode; and a plurality of electron emission sources being formed on said plurality of cathode electrodes and being positioned within holes formed in said insulation layer and in said at least one gate electrode (column 4, lines 35-45, and column 1, lines 10-15).

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With regard to claim 14,

Itoh et al. disclose the flat panel display device, said electron emission assembly comprising: a plurality of cathode electrodes being formed on a first surface of said first substrate to face said second substrate, the first surface of said first substrate facing said second substrate; at least one gate electrode being formed on the first surface of said first substrate to face said second substrate; an insulation layer separating said plurality of cathode electrodes from said at the least one gate electrode; and a plurality of electron emission sources being mounted on said plurality of cathode electrodes (column 4, lines 35-45, and column 1, lines 10-15).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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4. Claims 2,3,5,13,15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh et al. as applied to claims 1,12,14 above, and further in view of Sun et al. (USPN 2002/0160111).

With regard to claim 2,

Itoh et al. disclose the flat panel display device.

Itoh et al. do not disclose the use of carbon nanotubes.

Sun et al. do disclose the use of carbon nanotubes in place of diamond like carbon (paragraph 5).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the carbon nanotubes of Sun et al. into the device of Itoh et al. in order to improve conductivity.

With regard to claim 3,

Itoh et al. disclose the flat panel display device.

Itoh et al. do not disclose the use of carbon nanotubes.

Sun et al. do disclose carbon nanotubes having a length not longer than 5 micrometers (paragraph 33).

Utilizing the reasoning in the rejection of claim 2, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the carbon nanotubes of Sun et al. into the device of Itoh et al.

With regard to claim 5,

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Itoh et al. disclose the flat panel display device, with said at least one anode electrode being formed in a predetermined anode electrode pattern of a plurality of anode electrodes (column 1, lines 10-15).

Itoh et al. do not disclose the at least one anode electrode forming a striped pattern.

Sun et al. do disclose an anode electrode forming a striped pattern (502 of fig 5).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the anode pattern of Sun et al. into the device of Itoh et al. in order to improve image display.

With regard to claim 13,

Itoh et al. disclose the flat panel display device.

Itoh et al. do not disclose the plurality of electron emission sources including at least one carbon based material.

Sun et al. do disclose a plurality of electron emission sources including at least one carbon-based material selected from the group consisting of carbon nanotubes, fullerenes, diamond-like carbon, graphite, and a mixture of these materials (paragraph 3).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the carbon nanotubes of Sun et al. into the device of Itoh et al. in order to simplify manufacture.

With regard to claim 15,

Itoh et al. disclose the flat panel display device.

Itoh et al. do not disclose the plurality of electron emission sources including at least one carbon based material.

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Sun et al. do disclose a plurality of electron emission sources including at least one carbon-based material selected from the group consisting of carbon nanotubes, fullerenes, diamond-like carbon, graphite, and a mixture of these materials (paragraph 3).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the carbon nanotubes of Sun et al. into the device of Itoh et al. in order to simplify manufacture.

5. Claims 6,8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh et al. and Sun et al. as applied to claim 5 above, and further in view of Kiyomiya et al. (USPN 5939823).

With regard to claim 6,

Itoh et al. disclose the flat panel display device.

Itoh et al. do not disclose a black matrix.

Kiyomiya et al. do disclose a plurality of black matrix layers being formed between a plurality of anode electrodes, the plurality of black matrix layers not contacting the plurality of anode electrodes (8, 1B, 1R, 1G, of fig 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the black matrix of Kiyomiya et al. into the device of Itoh et al. in order to improve contrast.

With regard to claim 8,

Itoh et al. disclose the flat panel display device.

Itoh et al. do not disclose a black matrix.



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Kiyomiya et al. do disclose a plurality of black matrix layers being formed between a plurality of anode electrodes, the plurality of black matrix layers contacting the plurality of anode electrodes (8, 1B, 1R, 1G, of fig 24).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the black matrix of Kiyomiya et al. into the device of Itoh et al. in order to improve contrast.

6. Claims 7,9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh et al., Sun et al., and Kiyomiya et al. as applied to claims 6,8 above, and further in view of Sung et al. (USPN 6713953).

With regard to claim 7,

Itoh et al. disclose the flat panel display device.

Itoh et al. do not disclose a black matrix.

Kiyomiya et al. do disclose a black matrix that, in combination with the device of Itoh et al. would necessarily contact the plurality of conductive layers.

Sung et al. do disclose a black matrix being electrically conductive.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the black matrix of Kiyomiya et al. and Sung et al. in order to improve contrast.

With regard to claim 9,

Itoh et al. disclose the flat panel display device.

Itoh et al. do not disclose a black matrix.

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Kiyomiya et al. do disclose a black matrix that, in combination with the device of Itoh et al. would necessarily contact the plurality of conductive layers.

Sung et al. do disclose a black matrix being electrically conductive.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the black matrix of Kiyomiya et al. and Sung et al. in order to improve contrast.

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh et al. as applied to claim 1 above, and further in view of Tanaka (USPN 6175344).

With regard to claim 11,

Itoh et al. disclose the flat panel display device.

Itoh et al. do not disclose the at least one anode being formed as a single unit.

Tanaka does disclose an anode electrode being formed as a single unit covering over 80% of the first surface of said second substrate (column2, lines 45-50).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the anode of Tanaka into the device of Itoh et al. in order to simplify manufacture.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. USPN 6359383, 2002/0001905, 5534749.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M. Raabe whose telephone number is 571-272-8434. The examiner can normally be reached on m-f 7am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CR

  
ASHOK PATEL  
PRIMARY EXAMINER